# Direct Measurement of Mercury Reactions in Coal Power Plant Plumes

Initial Coordination Meeting:

EPRI

and: Frontier Geosciences

University of North Dakota Energy and Environmental Research Center

With: Department of Energy National Energy Technology Laboratory

Kenosha, Wisconsin/Pittsburgh, Pennsylvania

March 18, 2003

EPRI

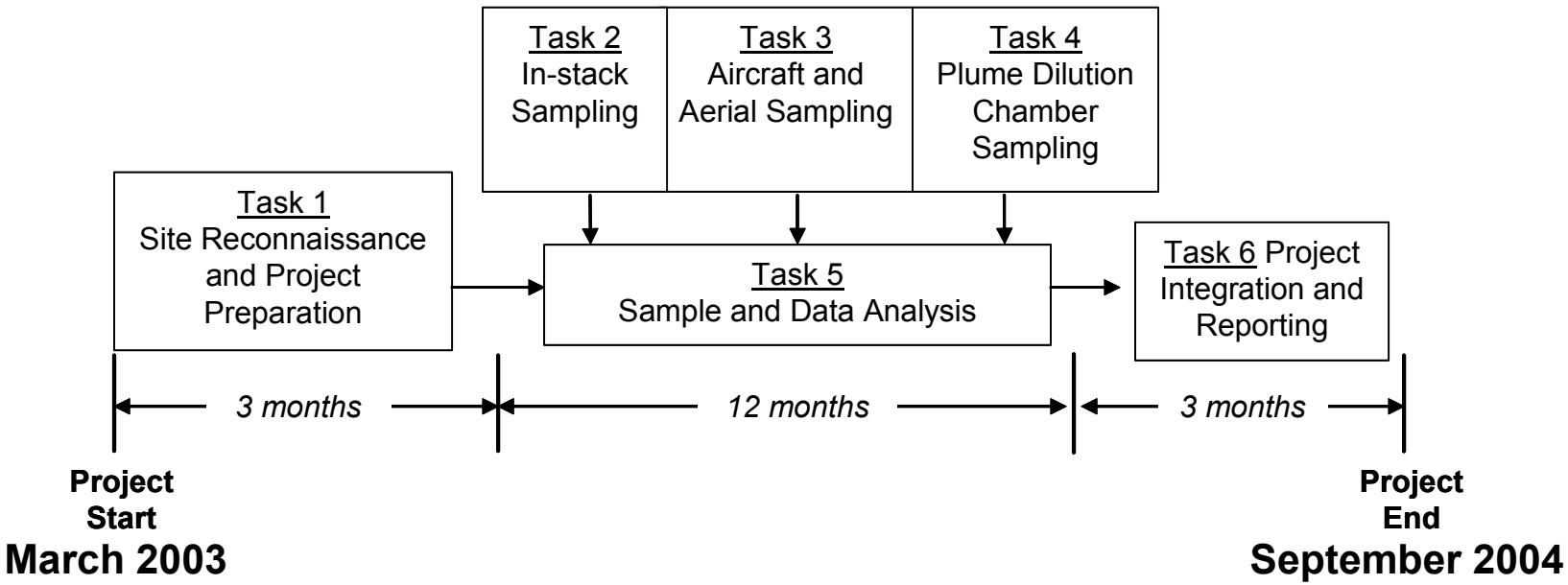
# GENERAL STRUCTURE OF CONFERENCE

- What are we doing and why are we doing it?
- How will we do it?
- What are the basic steps we will use to get there?
- How long will it take?
- What are the major milestones?
- What problems do we anticipate and how will we overcome them?

# Order of Discussion

- Introduction to program: Mercury Reactions in Power Plant Plumes – EPRI (10 mins)
  - Rationale
  - Implications
  - Interpretations
- Background: evidence for mercury redox reactions in plumes – EPRI, Frontier Geosciences (15 mins)
- The first experiment: Georgia Power Plant Bowen, 10/02 – All (20 mins)
- DOE NETL Project – All (45 mins)
- Next steps

# PROJECT SCHEDULE



# DELIVERABLES LIST, TECHNICAL PROPOSAL

- A kick off briefing within 60 days following award of the cooperative agreement
- Annual topical reports
- A final report
- Quarterly financial status reports
- A detailed project briefing no later than 60 days prior to the end of each budget period
- A technical paper presentation at the DOE/NETL Annual Contractor's Review Meeting
- Hot line reports as required
- Hazardous Substance Plan within 30 days after award and Hazardous Waste Report at the end of the effort.

# The first experiment: Georgia Power Plant Bowen

- Plant Bowen characteristics; comparison with Pleasant Prairie Plant
- Summary of project logistics: pre-ops; flight plans executed; sampling executed; problems in sampling and analysis
- Lessons learned for future projects

# Pleasant Prairie Plant

# Pleasant Prairie Plant

# Project Plan

**OBJECTIVES**

- **Clarification of role, rates, and results of mercury chemistry from coal-fired power plants.**
- **Approach: Hg concentration & speciation in plume by aircraft; in stack by fixed samplers; compared with dilution chambers in stack**

**TASKS**

1. **Plant selection, agreements with operating company, site reconnaissance, logistics for experiment , Technical Advisory Committee *(EPRI)***
2. **In-stack measurements and speciation of mercury using Ontario Hydro method *(UNDEERC)***
3. **Aircraft measurements at distances of approximately 500 feet to 5 miles downwind of the stack using repeated passes through the plume *(UNDEERC)***
4. **Method validation, plume dilution devices *(Frontier)***
5. **Sample laboratory analysis, QA/QC checks, data intercomparison for interpretation *(UNDEERC; Frontier)***
6. **Data integration, interpretation, and reporting *(All)***